SONY

3-753-461-21 (1)

GPS (Global Positioning System) Receiver

IPS-360

Operating Instructions

Before operating the unit,
please read this manual thoroughly
and retain it for future reference.

PYXIS

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Owner's Record

The model and the serial numbers are located at the rear, and the serial number in the battery compartment. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. IPS-360 Serial No. _____

WARNING

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna
Relocate the equipment with respect to the receiver
Move the equipment away from the receiver
Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:
"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

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*Use the ◯ (for example, (SET)) button in the section with the ◯

Introduction

Features

Capabilities of this unit

- You can check and store your present latitude and longitude.

POS (position) mode: see page 32 for reference.

- You can store the latitude/longitude data for 100 destination points.
- You can store the titles for the latitude/longitude data.
- The distance is displayed in miles, nautical miles or kilometers.
- The unit shows the precise time (UTC: Coordinated Universal Time or LOCAL: local time) based on the atomic clock in the GPS satellite.

Note
For nautical and aeronautical navigation, use this unit only as a supplement to the navigation charts required by the relevant legislatory body.

- You can track distance, direction, altitude and points you have passed.

TRACK mode: see page 39 for reference.

- You can check the distance and direction to your destination point.
- You can plan and store up to nine routes and destinations.
- You can check your absolute direction (the direction in which you are moving) and your absolute velocity (your speed).

NAV (navigation) mode: see page 42 for reference.

What is GPS (Global Positioning System)?

What is GPS?

GPS is a satellite-based navigation system developed and maintained by the United States Department of Defense (DoD). When complete (in 1993), the GPS constellation will consist of 24 satellites. The satellites transmit signals which include an identifying code for each satellite, accurate time information, and navigation data. The Sony GPS receiver automatically selects 4 satellites and determines your precise latitude, longitude, and altitude:
— anywhere in the world: at sea, on land, or in the air.
— at any time.
— in any kind of weather.
— with a position accuracy of 30 m to 100 m (98 ft to 328 ft); position accuracy is subject to DoD regulations.
— with an accuracy in time of 10^{-9} seconds.

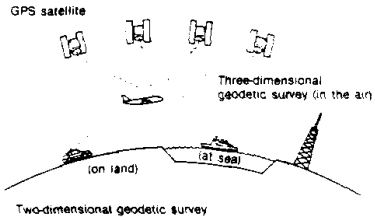
WARNING: GPS system signals are controlled, maintained and operated by the Department of Defense of the United States. Without notice, the DoD can change the characteristics of this signal, which will degrade the accuracy of this unit. Use Sony's IPS-360 at your own risk.

How to determine your position with GPS

- GPS determines latitude, longitude and altitude by defining the whole earth as an ellipsoid which revolves on its axis. This system is called WGS (World Geodetic System) coordinate system.
- Latitude, longitude and altitude of a conventional world atlas are determined by a coordinate system in which the ellipsoids have different centers for each area.
- This unit displays the latitude and longitude determined by the WGS coordinate system which uses a single coordinate system for the world. **Therefore, the latitude and longitude displayed in this unit may not be identical with those found in an atlas.** (See page 22 "Setting latitude and longitude to a chart")
- **GPS indicates the true bearing, not the compass (magnetic) bearing.**

GPS system

- GPS satellites
  6 orbits × 4 satellites = 24 satellites (including spare satellites)
- Ground control station to track and control the GPS satellites
- GPS receiver



GPS system specifications

Satellite altitude: About 20000 km
Satellite orbit: About a 12-hour-cycle elliptical orbit

Signal format:
P code signals are used for military purposes and C/A code signals are used for civilian purposes. The unit tunes itself to the C/A code signals.

C/A code:

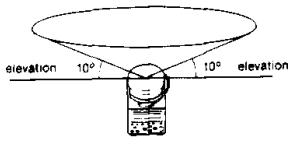
Frequency	1575.42 MHz
Clock	1.023 Mbps
Orbit data speed	50 bps
Signal strength	−160 dBw

Modulation: Direct sequence

Precautions (Important)

Notes on receiving GPS Satellite Signals

- **It is not possible to receive the GPS satellite signals indoors. Be sure to install the antenna outdoors, horizontally, with no obstructions. (See page 14 "Antenna connection".)**
- **GPS signal reception may become poor, when a GPS satellite moves low on the horizon (low elevation angle) or is obstructed by a building, etc.**



To Acquire/Maintain Data from the GPS Satellites

It takes about 30 minutes for the unit to receive the data from the GPS satellites and determine the location when:
- **you use the unit for the first time**
- you have not used the unit for long time and the data in the memory has become too old*
- you use the unit after you have moved a long distance (to abroad, for example) with this unit turned off.*

*In these cases, you have to initialize the unit before using the unit again.

To initialize the unit, follow the steps below

1 Press the POWER button to turn on the unit.

2 Press the SET button.

3 Press the △/▽ buttons to select "INITIALIZE RCV." display.

4 Press the ENTER button.
"CLEAR/RECALL" display appears.

5 Press the CLEAR button.
The unit is now initialized.

Use/Connecting for Water

This product is designed to be water-resistant but should not be immersed in water or come in continuous contact with water.

Power Source

Do not put anything in the DC IN 6V jack except Sony supplied adapter.

Shock

Do not expose the unit to mechanical vibration or shock. This may cause malfunction.

Cleaning

Clean the unit with a soft cloth. Do not use any type of solvent such as alcohol or benzene.

Location

Never put the unit:
— in a car parked in the sun (especially in the summer)
— near strong magnets or speakers
— in a dusty place.

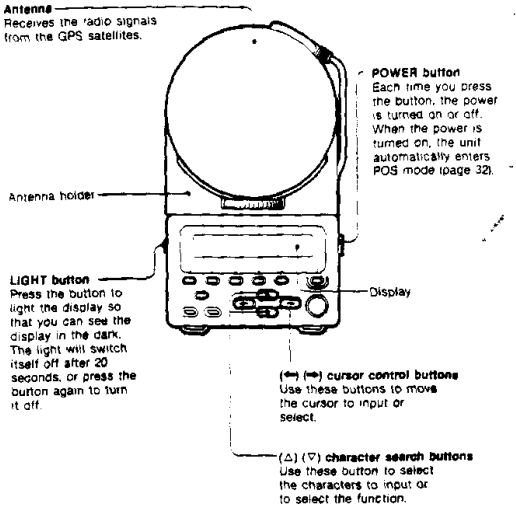
Note on the LCD (liquid crystal display)

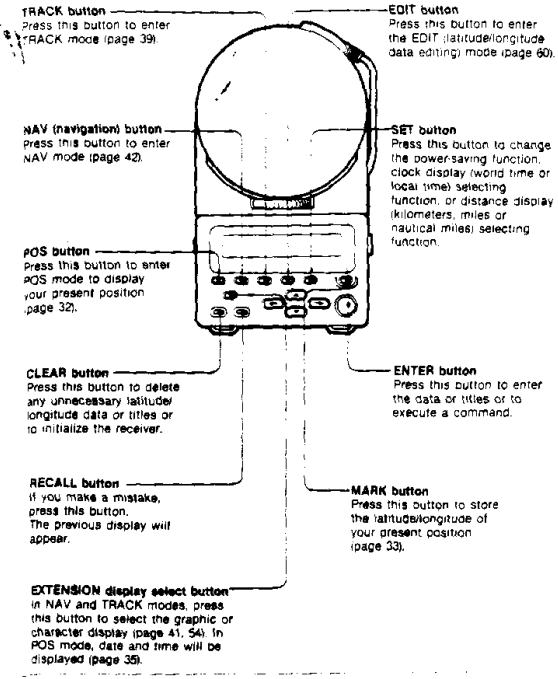
As this unit uses an LCD, do not expose the unit to:
— direct sunlight or ultraviolet rays for a long time (such as at a beach in the summer)
— more than 50°C (122°F) of ambient temperature or less than −10°C (14°F). In a very high ambient temperature, the display may get darker. In a very low ambient temperature, the display changes slowly. (The display will return to normal condition under the proper operating temperature.)
— high humidity. The LCD capability may deteriorate and a malfunction may occur.

On Safety

Should any solid object or liquid fall onto the unit, disconnect the power source and have the unit checked by qualified personnel before operating it any further.

Location and Function of Parts and Controls


Antenna
Receives the radio signals from the GPS satellites.
POWER button
Each time you press the button, the power is turned on or off. When the power is turned on, the unit automatically enters POS mode (page 32).
Antenna holder
LIGHT button
Press the button to light the display so that you can see the display in the dark. The light will switch itself off after 20 seconds, or press the button again to turn it off.
Display
(⇐) (⇒) cursor control buttons
Use these buttons to move the cursor to input or select.
(△) (▽) character search buttons
Use these button to select the characters to input or to select the function.


TRACK button
Press this button to enter TRACK mode (page 39).
EDIT button
Press this button to enter the EDIT (latitude/longitude data editing) mode (page 60).
NAV (navigation) button
Press this button to enter NAV mode (page 42).
SET button
Press this button to change the power-saving function, clock display (world time or local time) selecting function, or distance display (kilometers, miles or nautical miles) selecting function.
POS button
Press this button to enter POS mode to display your present position (page 32).
CLEAR button
Press this button to delete any unnecessary latitude/longitude data or titles or to initialize the receiver.
ENTER button
Press this button to enter the data or titles or to execute a command.
RECALL button
If you make a mistake, press this button. The previous display will appear.
MARK button
Press this button to store the latitude/longitude of your present position (page 33).
EXTENSION display select button
In NAV and TRACK modes, press this button to select the graphic or character display (page 41, 54). In POS mode, date and time will be displayed (page 35).

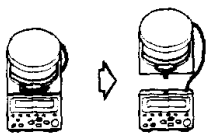
Preparation

Antenna Connection

Installing the Antenna separately

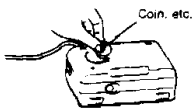
Using the extension antenna cable (supplied), you can install the antenna about 7 meters (23 ft) apart from the unit.

● **Disconnecting the antenna**



● **Replacing the cord with the extension antenna cable (supplied)**
Make sure that the power is turned off.

1



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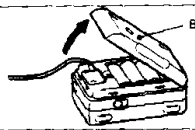

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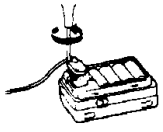

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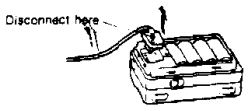

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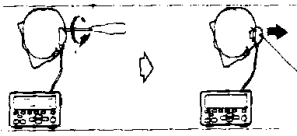

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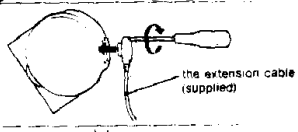

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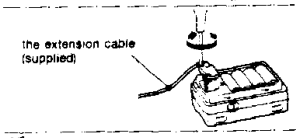

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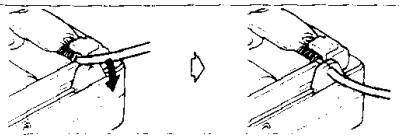
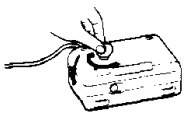
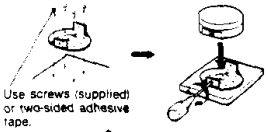


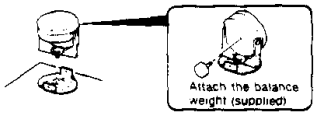
9



● Installing the Antenna

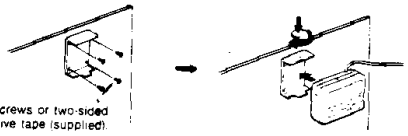


Installing the antenna on the roof of a car, etc.



● Installing the keyboard/display unit

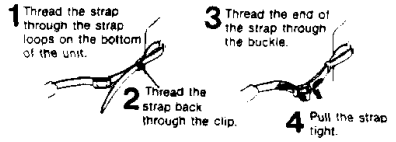
Install the unit on the wall of a car (inside) or in a boat cabin, etc.



Note

If the antenna is disconnected from the unit, "•NO ANT. UNIT•" appears in the display. The latitude and longitude of your present position will not appear. Make sure that the antenna cable is firmly connected during navigation.

Attaching the shoulder strap


1 Thread the strap through the strap loops on the bottom of the unit.
2 Thread the strap back through the clip.
3 Thread the end of the strap through the buckle.
4 Pull the strap tight.

When carrying the unit, pass the shoulder strap around your neck or shoulder to prevent accidentally dropping the unit.

Power Sources

Operating the unit on DC 6 V

Battery	4 size AA (R6) alkaline batteries
Boat or car battery	Use the supplied power adaptor DCC-360P (for 12/24 V operation)

Use only Sony supplied accessories.

Notes

- The unit uses alkaline battery power to store the latitude/longitude data in memory. **Keep the alkaline batteries installed in the unit**, even when operating the unit with a boat or car battery.
- The memory in the receiver (antenna) is kept by a lithium battery. The battery life is about five years.

How to insert the batteries

1

2

3

(Continued)

(Continued)

4

5

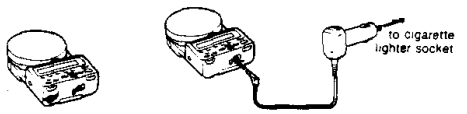
If the voltage decreases during operation

If the voltage becomes less than 4.0 V during operation, "•BATTERY LOW•" appears on the display, then after a while, "•BATTERY EMPTY•" appears. When you see "•BATTERY LOW•" display, turn off the power first, and replace the alkaline batteries with new ones.

Note

To prevent memory loss, insert the new batteries within 30 minutes of removing the old ones.

Using the DCC-360P



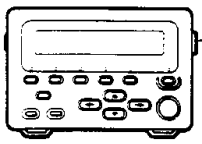
DCC-360P Cigarette lighter power adaptor (supplied)

Using the DCC-360S

Cigarette lighter triple socket (supplied)

When You Power On The Unit

The unit retains the last location of the GPS satellites from which the unit received signals in the area. Using the orbital data, the unit can determine your present position quickly.
In the initial mode (without any orbital data), "INIT" appears in the display and it takes the unit about 30 minutes to acquire the orbital data ("INIT" disappears).
When you use the unit for the first time, or whenever you see "INIT" in the display, follow the steps below to store the receivable GPS satellite data for the area. Set up the antenna in a location that is free of large obstacles such as trees, large buildings, etc.



Press the POWER button to turn on the unit.
While the unit receives the GPS satellite signals and determines the latitude and longitude of the present position, the display changes in the following sequence.

```
*SONY GPS RECEIVER*
(C)1991 SONY CORP.
```

(Continued)

(Continued)

```
-WAITING ACQ.-
      EDIT SET
```

The unit is searching for the GPS satellite signals.

*While the unit is in acquisition mode, only the EDIT and SET functions can be utilized.

Received GPS satellite number

```
SAT  :01 02 03 04
INIT
```

The unit receives the GPS satellite signals.

INIT appears only during initialization (page 10).

GPS signal strength (▁ weak – ▇ strong)

Received GPS satellite number

```
SAT  :01 02 03 04
INIT :0E  --  L-
```

Reception from the GPS satellite is stable.

L (lock) indicates that the unit is receiving the GPS satellite signal.

E (ephemeris) indicates that the unit has acquired the orbital data.

Mode

Latitude N: north latitude
S: south latitude

```
POS  :N 12°34'56.7"
WGS84:E123°45'57.8"
```

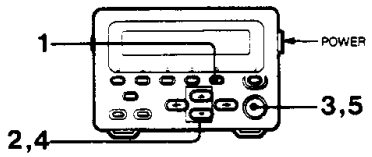
When the unit acquires 3 or more GPS satellites, it automatically enters the POS mode. The latitude and longitude of the present position appear in the display.

Geodetic system

Longitude E: east longitude
W: west longitude

Setting Latitude and Longitude to a Chart

By changing the geodetic system, you can set the unit to display the identical latitude and longitude as your map. For the coordinate area, see the table of coordinate area of each country/area on page 24 – 26.
When you want to navigate by referring to an area map, or when you stay in the area for a while, select the appropriate geodetic system (coordinate area).
(Read "How to determine your position with the GPS" on page 8 for reference.)



Set the Japanese coordinate area (JAPAN) for example.

1 **Press the SET button.**

```
SET
▮POWER SAVE
```

2 **Press the Δ/▽ buttons to select "GEODETIC SYSTEM".**
Each time you press the Δ/▽ button, the display changes in the following sequence.
POWER SAVE↔CROSS WAY POINT↔TIME DIFFERENCE↔ GEODETIC SYSTEM↔LENGTH UNIT↔DIRECTION↔POS. PRECISION↔INITIALIZE RCV.↔ POWER SAVE

```
SET
▮GEODETIC SYSTEM
```

(Continued)

(Continued)

3 **Press the ENTER button.**

```
GEODETIC SYSTEM
▮JAPAN
```

4 **Press the Δ/▽ buttons to select "JAPAN".**
Each time you press the Δ/▽ button, the coordinate area changes (in alphabetical sequence except Japan. See the table on page 24 – 26.)

```
GEODETIC SYSTEM
▮WGS84
```

5 **Press the ENTER button.**
The latitude and longitude displayed will be determined by the coordinate area selected in step 4. (In these operating instructions, we selected the Japanese coordinate area ("JAPAN" for example.)
Example: Latitude and longitude of your present position

```
POS  :N 12°34'56.7"
JAPAN E123°45'57.8"
```

Coordinate area selected in step 4.

Table of Coordinate Areas

See page 22 to set the coordinate area.

Area	Coordinate area	Country	Geodetic system
AFRICA	AFRI 1	Ethiopia Mali Senegal Sudan	ADINDAN
	AFRI 2	Botswana Lesotho Malawi Swaziland Zaire Zambia Zimbabwe South Africa	ARC 1950
	AFRI 3	Morocco	MERCHICH
ASIA	JAPAN	Japan	TOKYO
	ASIA 0	Korea	
	ASIA 1	Hong Kong	HONG KONG 1963
	ASIA 2	Singapore	SOUTH ASIA
	ASIA 3	Philippines	LUZON
	ASIA 4	Thailand Vietnam	INDIAN
	ASIA 5	Bangladesh India Nepal	
	ASIA 6	West Malaysia Singapore	KERTAU 1948
CENTRAL AMERICA	CEAM 1	Belize Costa Rica El Salvador Guatemala Honduras Nicaragua Mexico	NORTH AMERICAN 1927

Area	Coordinate area	Country	Geodetic system
EUROPE	EURO 1	Austria Belgium Cyprus Channel Islands Denmark England Finland France Federal Republic of Germany Gibraltar Greece Ireland Italy Luxembourg Netherlands Norway Portugal Scotland Shetland Islands Spain Sweden Swizerland	EUROPEAN 1950
	EURO 2	Ireland	IRELAND 1965
	EURO 3	England Isle of Man Scotland Shetland Islands Wales	ORDNANCE SURVEY OF GREAT BRITAIN 1936
MIDDLE EAST	MDEA 1	Masirah Island Oman United Arab Emirates	NAHRWAN
	MDEA 2	Saudi Arabia	
	MDEA 3	Egypt	OLD EGYPTIAN

(Continued)

(Continued)

Table of Coordinate Areas

See page 22 to set the coordinate area.

Area	Coordinate area	Country	Geodetic system
NORTH AMERICA	NOAM 1	Canada Newfoundland Island	NORTH AMERICAN 1927
	NOAM 2	Alaska Canada Mexico Central America United States of America	NORTH AMERICAN 1983
OCEANIA	OCEA 1	Australia Tasmania Island	AUSTRALIAN GEODETIC 1984
	OCEA 2	New Zealand	GEODETIC DATUM 1949
SOUTH AMERICA	SOAM 1	Bolivia Chile Colombia Ecuador Guyana Peru Venezuela	PROVISIONAL SOUTH AMERICAN 1956
	SOAM 2	Argentina Bolivia Brazil Chile Colombia Ecuador Guyana Paraguay Peru Trinidad and Tobago Venezuela	SOUTH AMERICA 1969
	SOAM 3	Argentina	CAMPO INCHAUSPE
	SOAM 4	Brazil	CORREGO ALEGRE

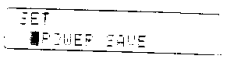
Changing the Unit of Measure

You can select the unit of length (distance), direction and altitude according to the location and situation.

Display	Unit
Length (distance)	Meters
	Miles
	Nautical miles
Direction	Degrees
	N/S/E/W

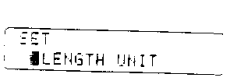
Set the appropriate unit according to whether you are travelling by land, sea, or air.

1 **Press the SET button.**



2 **Press the △/▽ buttons until "LENGTH UNIT" appears.**

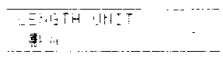
Each time you press the △/▽ button, the display changes in the following sequence.
POWER SAVE↔CROSS WAY POINT↔TIME DIFFERENCE↔GEODETIC SYSTEM↔LENGTH UNIT↔DIRECTION↔POS. PRECISION↔INITIALIZE RCV.↔POWER SAVE



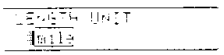
(Continued)

(Continued)

3 **Press the ENTER button.**



4 **Press the △/▽ buttons until the unit you want appears.**
Each time you press the △/▽ button, the display changes in the following sequence.
→km← mile ←nmile←



Appears when you have selected mile.

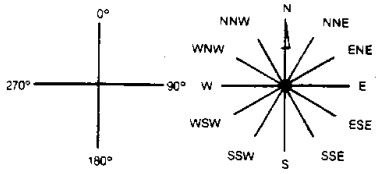
"nmile" stands for nautical miles.

Note
When "mile" or "nmile" is selected for the length unit, altitude will be displayed in feet.

5 **Press the ENTER button.**
The selected unit of distance appears.

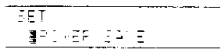
Changing the Units of Direction

When you want to decide the precise direction, set to the degree display. When you want to decide the approximate direction, set to the NSEW display.

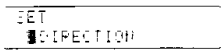


Degree display NSEW display

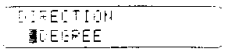
1 **Press the SET button.**



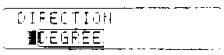
2 **Press the △/▽ buttons until "DIRECTION" appears.**
Each time you press the △/▽ button, the display changes in the following sequence.
POWER SAVE↔CROSS WAY POINT↔TIME DIFFERENCE↔ GEODETIC SYSTEM↔LENGTH UNIT↔DIRECTION↔POS. PRECISION↔INITIALIZE RCV.↔ POWER SAVE



3 **Press the ENTER button.**



4 **Press the △/▽ buttons to select the desired units.**
Each time you press the △/▽ button, DEGREE and 16 POINTS (NSEW) appear alternately.



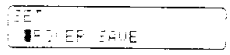
Appears when you select DEGREE.

5 **Press the ENTER button.**
The direction appears in the selected unit.

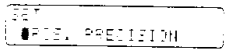
Setting the Positioning Precision

The GPS satellites are moving around the earth.
The latitude and longitude data could have some error depending on the location of the satellites. With this unit, you can choose the allowable margin of error by three steps (HIGH/MEDIUM/LOW). The unit doesn't update the data when the precision is lower than your setting. Choose "HIGH" when you wish to store the present location or when you use the unit in NAV mode or TRACK mode more precisely.
Note: Using this function, you can check the data to be used in POS mode.

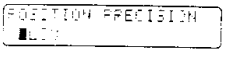
1 **Press the SET button.**



2 **Press the △/▽ buttons to select "POS.PRECISION".**
Each time you press the △/▽ button, the display changes in the following sequence.
POWER SAVE↔CROSS WAY POINT↔TIME DIFFERENCE↔ GEODETIC SYSTEM↔LENGTH unit↔DIRECTION↔POS. PRECISION↔INITIALIZE REV.↔ POWER SAVE



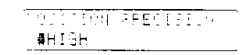
3 **Press the ENTER button.**



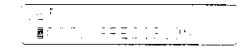
(Continued)

(Continued)

4 **Press the △/▽ buttons until the precision of the latitude and longitude you want appears.**
Each time you press the △/▽ button, the display changes in the following sequence.
LOW↔MEDIUM↔HIGH



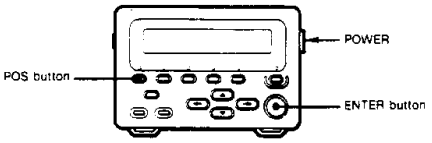
5 **Press the ENTER button.**
You can set the positioning precision you want.



Checking the Present Position —POS (position) mode

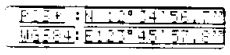
Operation

You can check where you are by the latitude and longitude which appear in the display.



Press the POS button.
The latitude and longitude of your present position appear. If you see "INIT" in the display, the unit is in the initial mode. See page 20 "When you power on the unit".

POS mode Latitude (north latitude)



Geodetic system Longitude (east longitude)

In the POS mode, "•" appears whenever the unit renews the latitude and the longitude data, "?" appears when the data precision is poor. See "Setting the Positioning Precision" (page 30) for details.
The "WAITING ACQ." display appears when receiving condition is poor.

Checking the reception status from the GPS satellite

Press the ENTER button while your present position appears in the POS mode.

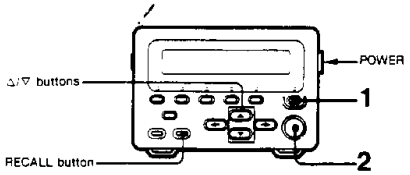
Received GPS satellite number

L (lock) indicates that the unit is receiving the GPS satellite signal.

E (ephemeris) indicates that the unit has the orbital data of the GPS satellite in memory.

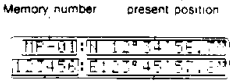
Storing Your Present Position

After displaying your present position, you can store the latitude and longitude data in the MP (marked point) memory numbers. You can store up to 50 points.
Store the data for each major point that you pass:
— to find the point again
— to use as the intermediate point in the NAV (navigation) mode.



1 Press the MARK button.
The unit displays the present position and time. The unit prepares itself for data input.

Memory number Latitude of present position



Present time (hour/minute/second) Longitude of present position

2 Press the ENTER button.
The data in the display will be stored.
The title of the point will be the present time in hours, minutes, and seconds.
(To change the title, please see page 62)

When you do not want to store the data after pressing the MARK button

Press the RECALL button.
The previous display appears.

If you cannot store the data

To cancel storing
When "MEMORY FULL!" is displayed, press the RECALL button.

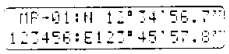
To delete unnecessary data and store new data

1 When "MEMORY FULL!" is displayed, press the ENTER button.

2 Select the memory number of the unnecessary data with △/▽ buttons.

3 Press the ENTER button.

4 Press the ENTER button. (If you do not wish to delete the data, press the RECALL button and select another memory number.)

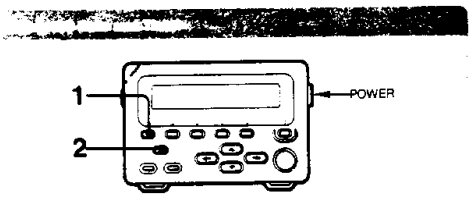


You cannot delete the latitude/longitude data that is being used in the NAV mode. If you try to delete it, "DATA IN USE!" appears. If this happens, press the RECALL button and go to step 2 and select another latitude/longitude data to delete.

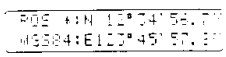
5 Press the ENTER button.
The latitude/longitude data in the memory number selected in step 2 is deleted and the latitude/longitude data of your present position is stored in the memory number.

Displaying the Date and Time

The UTC date and time signal is included in the signal from the GPS satellites. The unit receives the radio beam and displays the date and time.



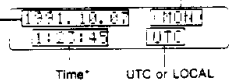
1 Press the POS button.
Your present position appears.



2 Press the EXTENSION button.
The date and time appear for 5 seconds, then the previous display reappears.

Day of week

Date

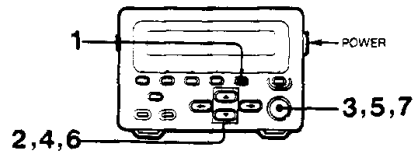


Time* UTC or LOCAL

*When the unit is receiving data from GPS satellites, the precision of the clock is ±1 sec/month. If no data is received, a built-in microcomputer provides back-up for the clock, but the precision is about ±30 sec/month.

Setting the Local Time

By entering the time differential from the universal standard time, you can set the unit to display the local time of the area. Set to the local time when you stay there for a while. Refer to the Coordinated Universal Time Differential Chart (page 38) for the time differential of the area.



1 **Press the SET button.**

SET
POWER SAVE

2 **Press the △/▽ button until "TIME DIFFERENCE" appears.**
Each time you press the △/▽ button, the display changes in the following sequence.
POWER SAVE↔CROSS WAY POINT↔TIME DIFFERENCE↔ GEODETIC SYSTEM↔LENGTH UNIT↔DIRECTION↔POS. PRECISION↔INITIALIZE RCV.↔ POWER SAVE

SET
TIME DIFFERENCE

3 **Press the ENTER button.**
You can select the time display.

TIME DIFFERENCE
UTC

(Continued)

4 **Press the △/▽ buttons to display "LOCAL".**
Each time you press the △/▽ buttons, UTC and LOCAL appear alternately

TIME DIFFERENCE
LOCAL

5 **Press the ENTER button.**

TIME DIFFERENCE
0:00

6 **Press the △/▽ buttons until the correct time differential of the area appears.**
See the coordinated universal time differential chart on page 38.
You can enter time differential from −15:30 to +15:30 in 30-minute intervals.
The display changes as follows.

TIME DIFFERENCE
+ 0:00 hr

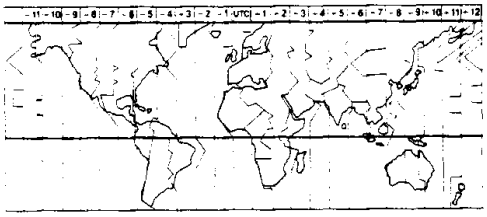
▽ button ←	△ button →
−15:30↔−15:00↔ … ↔0↔ … ↔+15:00↔+15:30	

7 **Press the ENTER button.**
The display shown in step 2 appears.
Henceforth, whenever you display the date and time, the local time appears.

To return to the UTC display
Display UTC in step 4.

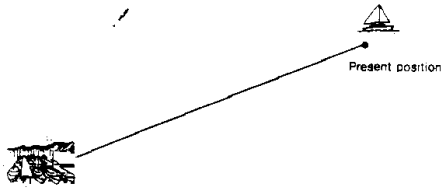
Coordinated Universal Time Differential Chart

To set the local time, see page 36.



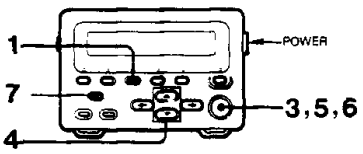
Tracking Distance, Direction and the Points You have Passed—TRACK Mode

The unit displays the distance, direction and points you have passed from the start point to your present position. As the start point for the TRACK mode, you can use the point you started from or any point you have passed. Use this function to display graphically all the points you have passed enroute to your present position.



Concept

Displaying the Distance, Direction and Points You Have Passed



1 **Press the TRACK button.**
The unit enters TRACK mode.
If the following display does not appear, press the button again.

TRACK
NEW START POS.

(Continued)

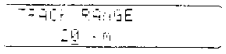
(Continued)

2 **Press the △/▽ buttons to display the start point to be entered.**

To enter a new start point, display "NEW START POS."

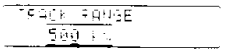
To continue from the start point you have entered, display "CONTINUE" and go to step 5.
Each time you press the △/▽ button, "NEW START POS." and "CONTINUE" appear alternately.

3 **Press the ENTER button.**



4 **Press the △/▽ buttons to display a reduced scale ratio.**

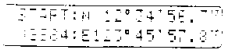
Note: Once tracking has been started, it is not possible to change the TRACK RANGE.



Example: when you select 500 kilometers

Length unit	▽ button←				→△ button		
Meter	20	50	100	200	500	1000	km
Mile	12	30	60	125	310	620	mile
Nautical-mile	10	27	55	110	270	540	nmile

5 **Press the ENTER button.**
When you select "CONTINUE" in step 2 and skip steps 3 and 4, this display of the start point appears.

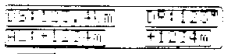


Latitude and longitude of start point

6 **Press the ENTER button.**

Distance from the start point to your present position

Direction of the present position from the start point



Relative altitude (This indicates the altitude relative to the starting point.

Absolute altitude (This is the altitude based on WGS84 coordinate.)

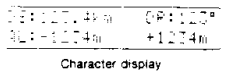
(Continued)

(Continued)

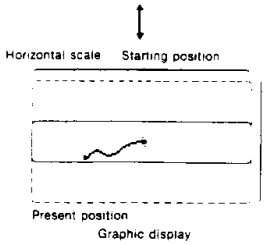
7 **To see the points you have passed in the graphic display**

Press the EXTENSION button.
The graphic display of the unit shows the points you passed from the start point to the present position in a rough figure.
(Note: In the graphic display, the higher latitude is, the larger discrepancy is.)

Each time you press the EXTENSION button, the character display and graphic display appear alternately.



Character display



Graphic display

Vertically, the unit stores three times as much track information as displayed on the screen.
Press △/▽ buttons to scroll display.
The horizontal scale ratio corresponds to the ratio selected in step 4.
The ratio of the vertical (N/S) to the horizontal (E/W) display is about a half.

To see the graphic display after changing the display, or turning the power off
Make sure the power is ON, then select "CONTINUE" by pressing △/▽ button.
Don't select "NEW START POS." as this would renew the starting point.

Checking the Distance and Direction to your Destination—NAV (navigation) mode

When you are in NAV mode, the unit will provide the following information.
— the direction and distance from the present position to the destination points.
— heading and velocity (the speed at which you are moving)

(Continued)

(Continued)

Navigation steps
The following steps are required for navigation. See the following pages for operation procedure.

1 Decide the destination and route referring to a map, etc.

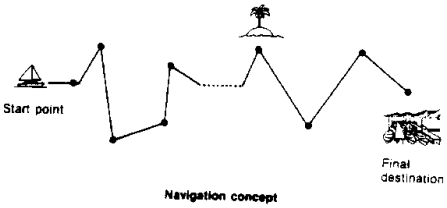
2 Store the latitude/longitude data (WP (way point)) of the destination points. (page 44)

3 Plan your route using the WP and/or MP and store the data. (page 48)

4 Start navigation. (page 52)

What are the WP and the MP?
WP (way point): The latitude and longitude of the destination points. Enter and store these data in the unit. (see page 44 to store the WP.)

MP (marked point): The latitude and longitude that are stored when you passed a point. Press the MARK, and Enter button to store the data (see page 33).

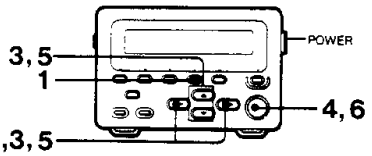


Navigation concept

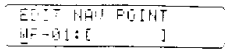
● : the point you are planning to pass (way point or marked point)

Storing the Latitude/Longitude Data of the Points of Destination
(To change the latitude/longitude data or titles, see page 46)

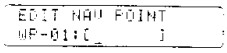
You can store the latitude/longitude data for up to 50 destination points in the memory numbers called WP (way point). Also, you can store the latitude/longitude data with titles of up to 6 characters. We recommend storing the data of the final destination and important intermediate points with a title, for example the name of a town.



1 **Press the EDIT button.**
The unit enters the latitude/longitude data edit mode.



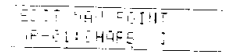
2 **Press the ← or → buttons to move the cursor to the first character.**



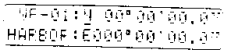
(Continued)

(Continued)

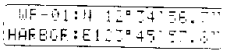
3 **Enter the title using the ←, →, △, and ▽ buttons.**
To advance/reverse the characters, press the △/▽ buttons.
To move the cursor back and forth, press the ←/→ buttons.



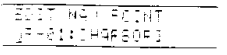
4 **Press the ENTER button.**
The unit is in latitude/longitude input mode.



5 **Enter the latitude and longitude using the ←, →, △, and ▽ buttons.**
To advance/reverse the number, press the △/▽ buttons.
To move the cursor back and forth, press the ←/→ buttons.



6 **Press the ENTER button.**
The latitude/longitude data is stored.



To store additional latitude/longitude data for WP

Repeat steps 2 to 6.
The memory number of way point (WP) will be renewed when you press the ENTER button in step 4.
We recommend storing some intermediate points.

When "MEMORY FULL"

Delete unnecessary data and store new data, or cancel storing.

To delete unnecessary data and store new data

1 While "MEMORY FULL!" is displayed, press the RECALL button.

2 Select the memory number of the unnecessary data with the △/▽ buttons, and press the ENTER button.

3 Move the cursor to the title with the ←/→ buttons.

4 Press the CLEAR button.
The title disappears.

5 Press the ENTER button.
"DELETE? ENTER/RECALL" appears.

You cannot delete the latitude/longitude data being used for navigation. If you try to do so, "DATA IN USE!" appears. If this happens, press the RECALL button and select another latitude/longitude data to delete.

6 Press the ENTER button.
The latitude/longitude data in the memory number selected in step 2 has been deleted. Store the new latitude/longitude data in the memory number.

To cancel storing
While "MEMORY FULL!" is displayed, press the RECALL button or wait until the screen automatically returns to the previous display after a few seconds.

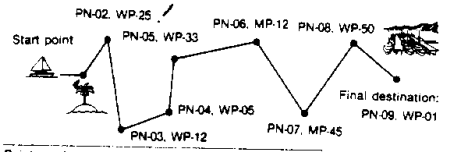
Characters you can use for titles

As you press the △/▽ buttons, letters, numbers, and symbols appear in the following order:

Press the ▽ button. Press the △ button.
← →
┌ 012···789(blank)ABC···XYZ()· + − *// = ' ,.:;!?#¥$%& ┐

Planning Your Routes
(To change the route, see page 47)

Plan the route according to the final destination and intermediate points. To plan the route, first select the route. Then, select the memory number called PN (point number) which indicates the order of points to be passed. Finally, select an intermediate point from the stored WP or MP latitude/longitude data and store it in the selected PN memory number.



Point number (passing order): PN-01
Latitude/longitude data to be used (WP or MP): WP-03

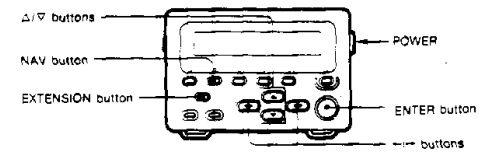
Example of a route with 8 intermediate points —Route 1 (RT-[1])

You can plan up to 9 routes with this unit. You can store up to 99 WP/MP including the final destination for a route. When you plan all 9 routes, you can store a total of 99 points.

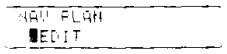
Steps to plan a route

❶ Select a route.
❷ Select a PN.
❸ Select a WP/MP and store it in PN.

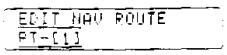
Repeat steps 2 and 3 to complete the routing.



1 **Press the NAV button.**
If the following display does not appear, press the button again.



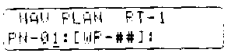
2 **Press the ENTER button.**
The route number appears.



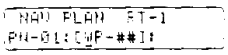
Route number

3 **Press the Δ/▽ buttons to display the route number.**
To advance/reverse the route number, press the Δ/▽ buttons.

4 **Press the ENTER button.**
The navigation plan appears.



5 **Press the ←/→ buttons to move the cursor to the WP or MP.**

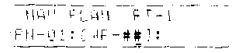


(Continued)

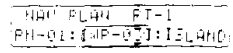
(Continued)

6 **Press the Δ/▽ buttons to display the WP or MP.**

7 **Press the ←/→ buttons to move the cursor to the WP (or MP) number.**



8 **Press the Δ/▽ buttons to display the WP (or MP) number.**



Example: when you select WP-03

To check the latitude/longitude data of the selected WP (or MP) number
Press the EXTENSION button. The latitude/longitude data appear. To return to the display in step 6, press the EXTENSION button again.

9 **Press the ENTER button.**
The latitude/longitude data of the WP (or MP) number are stored in the point number.

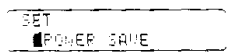
10 **Press the Δ button to display the next point number.**

11 **Repeat steps 5 to 10 to set up a route.**

Checking the Distance and Direction to your Destination —NAV (navigation) mode

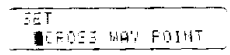
When you arrive at the navigation point, the unit alerts you by beeping and changing the display. You can set the radius around a navigation point, so the unit will alert you as you approach the navigation point.

1 **Press the SET button.**



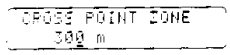
2 **Press the Δ/▽ buttons to display "CROSS WAY POINT!".**

Each time you press the ▽/▽ button, the display changes in the follows sequence.
POWER SAVE↔CROSS WAY POINT↔TIME DIFFERENCE↔GEODETIC SYSTEM↔LENGTH UNIT↔DIRECTION↔POS. PRECISION↔INITIALIZE REV.↔POWER SAVE



3 **Press the ENTER button.**

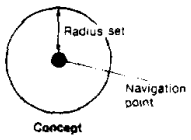
The radius used in the cross way point function appears.
The length unit is the one you have selected: kilometer, mile, or nautical mile.



(Continued)

(Continued)

4 **Press the Δ/▽ buttons to select the radius you want.**



Concept

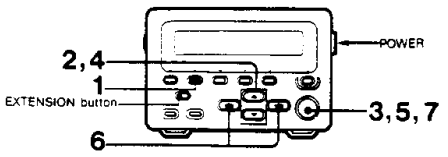
Length unit	▽ button←				→Δ button		
Meter	300	500	1000	2000	5000	9000	m
Mile	0.20	0.30	0.60	1.30	3.10	5.60	mile
Nautical-mile	0.20	0.30	0.50	1.00	2.70	4.90	nmile

5 **Press the ENTER button.**
When you enter the zone defined by the set radius, the unit alerts you by beeping. The unit also displays "CROSS WAY POINT."

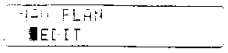
Checking the Distance and Direction to your Destination —NAV (navigation) mode

[redacted]

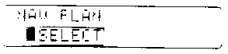
The unit shows the direction from the present position to the next point in the route, and the estimated time of travel to reach that point. The unit notifies you with the display and sound that you are close to an intermediate point or the final destination.



1 **Press the NAV button.**
If the following display does not appear, press the button again.

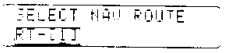


2 **Press the △/▽ buttons to display "SELECT".**
Each time you press the △/▽ button, the display changes in the following sequence.
┌EDIT↔SELECT↔OFF/ON┐



SELECT

3 **Press the ENTER button.**
The route number appears.



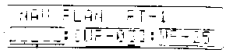
Route number

(Continued)

(Continued)

4 **Press the △/▽ buttons to display the route number to be navigated.**
To advance/reverse the route number, press △/▽ button.
Only the route numbers stored appear.

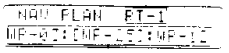
5 **Press the ENTER button.**
The navigation plan appears.



Previous navigation point (For the route example on page 47, this is the start point.) | Present navigation point (PN-01) | Next navigation point (PN-02)

6 **Press the ←/→ buttons to display the destination point (navigation point).**
To advance/reverse the navigation point, press →/← buttons.

Route number



The WP or MP numbers appear in the order in which the point numbers were stored. (see page 47.)

To check the data of the selected point number
Press the EXTENSION button. The latitude/longitude and title appear. To return to the display in step 6, press the EXTENSION button again.

(Continued)

Checking the Distance and Direction to your Destination —NAV (navigation) mode

(Continued)

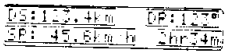
7 **Press the ENTER button.**
The unit starts navigating and displays the navigation data.

Distance to the navigation point | Direction of the navigation point

Speed | Heading

To display the required time left to the navigation point, press the ▽ button.
Each time you press the △/▽ buttons, the navigation data and required time appear alternately.

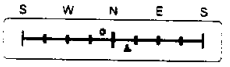
Distance to the navigation point | Direction to the navigation point



Speed | Estimated travel time to reach navigation point (hour, minute)

To change to the graphic display, press the EXTENSION button.
Each time you press the EXTENSION button, the navigation data and the graphic data appear alternately.

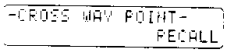
The direction of the display



Direction to the navigation point | Present heading

When you arrive at the navigation point

The following display appears with the beep sounding 10 times.



To return to the navigation data display

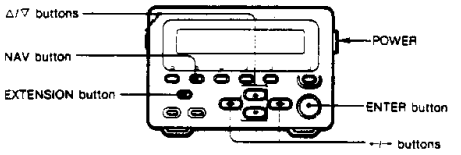
Press the RECALL button.
The navigation data for the next navigation point (WP-25 for the route example on page 47) appears and remains.

To turn off the NAV mode

Select "OFF" in step 2 (page 52).

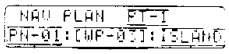
[redacted]

You can edit the latitude/longitude data for the intermediate points of the route you have planned. Check the latitude/longitude data before navigation in order to confirm the navigation data.



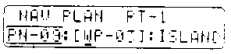
1 **Select the route to edit.**
(See "Making a route" on page 48.)

Route number



Point number | WP number | WP title

2 **Press the △/▽ buttons to display the point number to edit.**



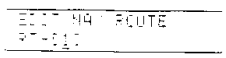
Example when you select PN-09

When you want to check the data for the point number you have selected
Press the EXTENSION button. The latitude/longitude data appears. To return to the display of step 2, press the EXTENSION button again.

To delete an intermediate point

1 **Press the NAV button.**
If the following display does not appear, press the button again.

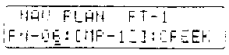
2 **Press the ENTER button.**



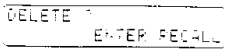
3 **Press the △/▽ buttons to select the route number to be changed.**

4 **Press the ENTER button.**

5 **Press the △/▽ buttons to select the point number to be deleted.**



6 **Press the CLEAR button.**
If you try to delete an intermediate point being used for navigation
"DATA IN USE!" appears. You cannot delete the data which is being used.
To cancel deleting, press the RECALL button.
To delete the intermediate point, turn off NAV mode (page 57), then delete the data.



7 **To delete the intermediate point,** press the ENTER button.
To cancel deleting, press the RECALL button.

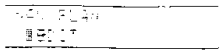
Example: When you want to delete WP-12 and MP-45

PN-01:WP-03		PN-01:WP-03
PN-02:WP-25		PN-02:WP-25
PN-03:WP-12		PN-03:MP-05
PN-04:MP-05		PN-04:WP-33
PN-05:WP-33		
		PN-95:MP-12
PN-96:MP-12		PN-96:WP-50
PN-97:MP-45	Final destination:	PN-97:WP-01
PN-98:MP-50		
Final destination: PN-99:WP-01		

When a memory number is deleted from a point number, the next memory number is stored in that point number.

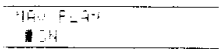
To turn off the NAV mode

1 **Press the NAV button.**
If the following display does not appear, press the button again.

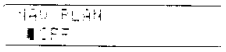


2 **Press the △/▽ buttons to show either "ON" or "OFF" in the display.**
Each time you press the △/▽ buttons, the display changes in the following sequence.

→ EDIT → ON → SELECT —



3 **Press the ENTER button.**



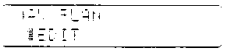
To turn on NAV mode again

Choose "SELECT" in step 2, and set the navigation point. NAV mode is turned on automatically.

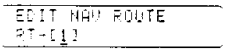
Checking the Distance and Direction to your Destination
—NAV (navigation) mode

To add an intermediate point

1 **Press NAV button.**
If the following display does not appear, press the button again.

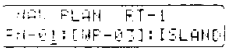


2 **Press the ENTER button.**

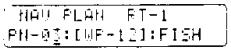


3 **Press the △/▽ buttons to select the route number to be changed.**

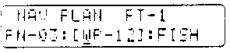
4 **Press the ENTER button.**



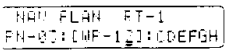
5 **Press the △/▽ buttons to select the PN number to be added.**



6 **Press the ←/→ buttons to move the cursor to the WP (or MP) number.**



7 **Press the △/▽ buttons to select the WP (or MP) number to be added.**



8 **Press the ENTER button.**
The latitude and longitude of the WP (or MP) number selected in step 7 is stored in the PN number selected in step 3.

Example: When you want to add WP-12 to PN-03 and MP-45 to PN-97

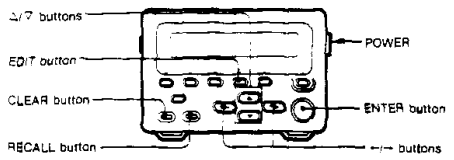
PN-01:WP-03		PN-01:WP-03
PN-02:WP-25		PN-02:WP-25
PN-03:MP-05		PN-03:WP-12
PN-04:WP-33		PN-04:MP-05
		PN-05:WP-33
PN-95:MP-12		
PN-96:WP-50		PN-96:MP-12
Final destination: PN-97:WP-01		PN-97:MP-45
		PN-98:WP-50
	Final destination:	PN-99:WP-01

When an intermediate point is added, the WP (or MP) number at that point number is stored as the next point number.

If you try to store more than 99 passing points in a route
"MEMORY FULL!" appears and the data is not stored. Press the RECALL button. Or leave it as it is until the display returns to the previous display after a few seconds. After deleting an unnecessary intermediate point in memory, you can store a new one.

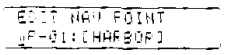
Editing the Latitude/Longitude Data of WP/MP in memory

You can retrieve or sort the latitude/longitude data of WP and MP to be used for navigation.

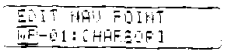


Calling up the WP or MP memory numbers in order

1 **Press the EDIT button.**
The unit enters the memory edit mode.



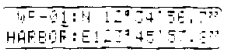
2 **Press the △/▽ buttons to select the memory number to be called up.**
To call up the WP memory numbers, select WP.
To call up the MP memory numbers, select MP.
If no data is stored for WP or MP "NO DATA!" appears in the display. Input the data first.



Example: when you call up WP memory numbers

3 **Press the △/▽ buttons to select the memory number to be called up.**

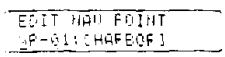
4 **Press the ENTER button.**



5 **When you have checked the latitude/longitude of the memory number, press the ENTER button.**
The *display returns to that of* step 1.

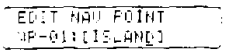
To call up the WP or MP memory numbers by entering a title

1 **Press the EDIT button.**



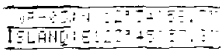
2 **Press the ←/→ buttons to move the cursor to the title.**

3 **Enter the title with the ←, →, △, and ▽ buttons.**
To advance/reverse the characters, press the △/▽ buttons.
To move the cursor back/forth, press the ←/→ buttons.

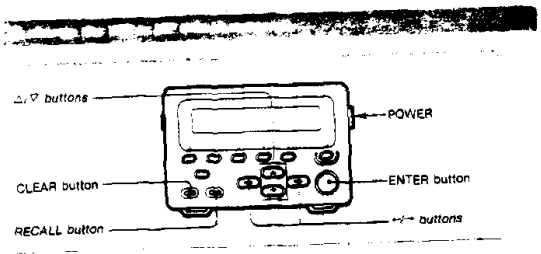


4 **Press the ENTER button.**
The latitude and longitude of the *memory number* of the title appear.
If "DUPLICATE NAME!" appears in the display. The entered title is already being used. Enter a title which has not yet been used.

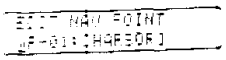
Called up memory number



5 **After you have checked the data, press the ENTER button.**
The display returns to that of step 1.

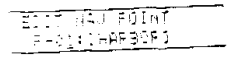


1 **Press the EDIT button.**
The unit enters the latitude and longitude editing mode.

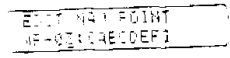


2 **Press the △/▽ buttons to select WP (or MP).**

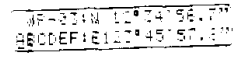
3 **Press ←/→ buttons to move the cursor to the WP (or MP) number.**



4 **Press △/▽ buttons to call up *the memory number whose title* to be changed.**



5 **Press the ENTER button.**



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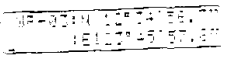
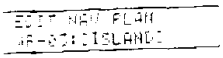
6 **Press the CLEAR number.**
The title disappears.



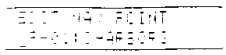
7 **Enter the new title with ←, →, △, and ▽ buttons.**
To advance/reverse the characters, press the △/▽ button.
To move the cursor back and forth, press the ←/→ button.

8 **Press the ENTER button.**
The new title is stored.



To delete the stored data of WP or MP

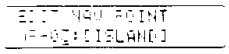
1 **Press the EDIT button.**



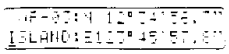
2 **Press the △/▽ buttons to select WP (or MP).**

3 **Press the ←/→ buttons to move the cursor to the WP (or MP) number.**

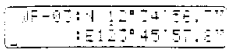
4 **Press the △/▽ buttons to call up the memory number to be deleted.**



5 **Press the ENTER number.**



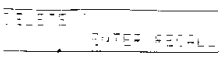
6 **Press the CLEAR button.**



7 **Press the ENTER button.**

If you try to delete the latitude/longitude data being used for navigation

"DATA IN USE!" appears. You cannot delete the data in use.
To stop deleting: Press the RECALL button.
To delete: First delete the intermediate point stored in your route.

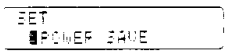


8 **Press the ENTER button.**
The latitude/longitude data on the display is deleted from memory.

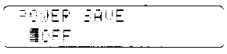
Setting the Display Interval —Power-Saving Function

You can set the interval from 10 to 90 minutes in 10-minute intervals. Use this function to save on power consumption when using this unit for a long time.
When the unit gets within a set distance from any way point or marked point along a route, the unit operates continuously. This set distance is equal to four times the value of the cross way point zone. See page 50 to modify the zone value.

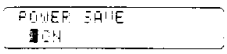
1 **Press the SET button.**



2 **Press the ENTER button.**



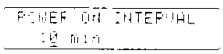
3 **Press the △/▽ buttons to select "ON".**
Each time you press the △/▽ button, ON and OFF appear alternately.



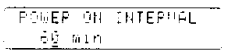
(Continued)

(Continued)

4 **Press the ENTER button.**



5 **Press the △/▽ buttons to select the desired interval.**
You can select an interval from 10 to 90 minutes in 10-minute intervals.
To select a long/short interval, press the △/▽ buttons.



Example: when you select the 60-minute interval

6 **Press the ENTER button.**
The unit automatically renews the data when the selected interval has passed.
While the navigation mode is ON, the interval becomes one fifth of the selected interval.

To release the function
Display "OFF" in step 4.

Note
This function is not available when the unit is not receiving the data from more than three GPS satellites.

Specifications

Physical Characteristics

Dimensions

	100 × 175 × 39 mm (W × H × D)
Receiver (antenna)	ø100 × 35 mm
Keyboard/Display	100 × 63 × 39 mm (W × H × D)

Weight

About 590 g (include 4 AA batteries)*
*Supplied only with the tourist model.

Display

2-Line, 40-Characters (20 × 2)

Operating Environment

Water	Receiver (antenna): Water resistant Keyboard/Display: Water resistant
Operating Temperature	Receiver: −20°C ~ +60°C Keyboard/Display: −10°C ~ +50°C

Operating Characteristics

Reception

1575.42 MHz, C/A Code
4 channel (parallel)
Sensitivity: −130 dBm

Power Requirements

R6 AA alkaline batteries × 4 (DC 6 V)
Battery life: about 2 hours
CAR battery cord DCC-360P (DC 12/24 V)

Current requirement	175 mA (12 V) 106 mA (24 V)

Performance

Accuracy

Position: 30 – 100 m with DOP* ≤ 6
Velocity: 0.3 knots with DOP ≤ 6 (0.56 km/h)
*DOP = Dilution of Precision

Data renewal

2 seconds typical

Max velocity

530 knots (980 km/h)

Memory Capacity

50 intermediate points (MP), 50 destinations (WP)
9 routes (a total of 99 points)

Optional Accessories

Cigarette lighter power adaptor DCC-360P
Cigarette lighter triple socket DCC-360S
Antenna extension cable
Carrying strap
Carrying case
Mounting hardware (1 set)
Operating instructions

Troubleshooting

The following check will help you correct problems that you may encounter with your unit. Before going through the check list below, first refer back to the connection and operating procedures.

Problem	Cause	Remedy
The unit does not receive any data from the GPS satellites, even after waiting for a considerable period.	• The unit was not used for a long time. • You have moved the unit a long distance with the unit turned off.	Initialize the unit. (See page 10 for details.)
The unit does not memorize data even when you press the MARK button.	The unit is not receiving data from the GPS satellites, or the receiving conditions are poor.	• Try again in an area with no major obstacles. • Try again when the elevation of the GPS satellites go up higher. (See "Notes on receiving GPS Satellite Signals on page 10.)
The unit does not renew latitude and longitude data. ("•" does not appear in the display.)		
"WAITING ACQ." appears in the display.		

Error Display

The following indicators appear in the display and the unit beeps.

Display	Cause	Remedy
DATA INITIALIZED	The dry batteries have been discharged and the data in this unit's memory has been lost.	Replace the batteries with new ones and store the latitude/longitude data again.
STATUS 01	There is a problem with the unit. Alternatively, you turned off the power while pressing a button.	Turn on the power again.
STATUS 02	Communication breakdown or Connection breakdown between the unit and the antenna.	Make sure that the antenna is firmly connected with the unit.
STATUS 03	Some trouble of the antenna.	Turn on the power again.
-BATTERY EMPTY-	The battery power is too low.	Press the power button to turn off the unit and replace with new batteries.

Display symbols

Symbol	Meaning	Refer pages
POS	Position mode	32
NAV	Navigation mode	42
WP	Way point	44
MP	Mark way point	33
RT	Route number	47
PN	Point number	47
SAT	GPS satellites	21, 32
L	Lock: The unit has succeeded in receiving the GPS satellite signal.	21
E	Ephemeris: The unit has the orbital data of the GPS satellite in memory.	21
INIT	Initial	10, 21
DS	Distance: The distance from the start point to your present position	41, 54
DR	Direction: The direction of your position relative to the start point	41, 54
HD	Heading	54
SP	Speed	54
AL	Relative altitude	41
UTC	Coordinated Universal Time	35, 37
LOCAL	Local time	54
⊃	Direction to the navigation point	54
▲	Heading	54
km	Kilometers	28, 40
nmile	Nautical miles	28, 40
mile	Miles	28, 40